REMARKS

This paper is being provided in response to the Office Action mailed December 30, 2002, for the above-referenced application. In this response, Applicant has amended claim 22 to clarify that which Applicant regards as the invention. Applicant respectfully submits that the amendments to the claims are supported by the originally filed application.

The rejection of claims 22 and 26-28 under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 5,935,331 to Naka et al. (hereinafter "Naka") is hereby traversed and reconsideration is respectfully requested in view of the amendments to the claims contained herein.

Applicant's independent claim 22, as amended herein, recites a method of spin-coating a semiconductor substrate. A coating material is dropped onto the semiconductor substrate and the semiconductor substrate is rotated about its center. An electric field is generated circumferentially around the semiconductor substrate and the coating material in which the electric field has an electric polarity that is opposite to an electric polarity of the coating material. Claims 23-28 depend directly or indirectly from independent claim 22.

The Naka reference discloses a spin coating process in which a substrate is rotated at low speed and a high-voltage pulse is applied between a substrate fixing base and a liquid chamber for a specified time period. While the high-voltage pulse is applied, the meniscuses of the coating liquid formed at a plurality of nozzles are attracted toward the

substrate fixing base so as to be discharged and coat the substrate. (See col. 22, lines 10-29).

Applicant's independent claim 22 discloses generating an electric field *circumferentially around* a semiconductor substrate and coating material and rotating the substrate about its center. In contrast, Naka teaches applying high-voltage pulses to generate an electrostatic attraction *between a substrate fixing base and a liquid chamber*. Liquid is attracted from the discharge nozzles of the liquid chamber to the substrate fixing base and coat an interjected substrate. Applicant respectfully submits that Naka does not teach or suggest generating an electric field *circumferentially around* the semiconductor substrate and the coating material during the coating process. Accordingly, Applicant respectfully requests that this rejection be reconsidered and withdrawn.

The rejection of claims 22 and 27-28 under 35 U.S.C. 102(b) as being anticipated by JP 5-259053 A (hereinafter "JP '053") is hereby traversed and reconsideration is respectfully requested in view of the amendments to the claims contained herein.

The features of independent claim 22 are discussed above. Claims 27-28 depend from claim 22.

The JP '053 reference discloses a spin coating process in which upper electrodes are embedded into an electrode table and lower electrodes are embedded into a rotary

table. Voltage is applied between the upper and lower electrodes during the spin coating to uniformly apply a solvent.

Applicant respectfully submits that JP '053 does not teach or suggest generating an electric field circumferentially around the semiconductor substrate and coating material as claimed by Applicant. Specifically, JP '053 teaches embedding upper and lower electrodes with respect to the substrate and applying a voltage between these electrodes as the coating is applied. The electric field is not generated circumferentially around the substrate and coating material to provide a uniform coating on the substrate. Accordingly, Applicant respectfully requests that this rejection be reconsidered and withdrawn.

The rejections of claims 22 and 27-28 under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,456,945 to McMillan et al. (hereinafter "McMillan") is hereby traversed and reconsideration is respectfully requested in view of the amendments to the claims contained herein.

The features of independent claim 22 are discussed above. Claims 27 and 28 depend from claim 2.

The McMillan reference discloses a coating process in which an input nozzle provides a coating mist to a substrate and a DC bias is created between a substrate holder and barrier plate to deposit material onto the substrate.

Applicant respectfully submits that McMillan does not teach or suggest generating an electric field circumferentially around the semiconductor substrate and coating material as claimed by Applicant. Specifically, McMillan discloses applying a DC bias between a substrate holder and a barrier plate to effect coating of a substrate. No electrical field is generated circumferentially around the substrate and coating material during the coating process. Accordingly, Applicant respectfully requests that this rejection be reconsidered and withdrawn.

The rejection of claims 22-25 and 27-28 under 35 U.S.C. 103(a) as being unpatentable over JP 8-153669 A (hereinafter "JP '669") in view of JP 4-135667 A (hereinafter "JP '667") is hereby traversed and reconsideration is respectfully requested in view of the amendments to the claims contained herein.

The features of independent claim 22 are discussed above. Claims 23-25 and 27-28 depend from claim 22.

The JP '669 reference discloses a coating application process in which a high voltage is applied between a nozzle and electrode base to electrically charge coating material as it is applied.

The JP '667 reference discloses a spin coating process in which electrodes embedded in a nozzle and substrate holding chuck are used to apply a voltage between

the nozzle and chuck. The electrode in the chuck faces a central region of the electrode in the nozzle so that an electric field is formed which has an increased intensity in the central region of the substrate.

Applicant respectfully submits that neither JP '669 nor JP '667, taken alone or in combination, disclose generating an electric field circumferentially around the substrate and coating material as claimed by Applicant. JP '667 appears to teach only the generation of an electric field between the input nozzle and the substrate holding chuck. JP '669 discloses a ring of elements 24 in Figure 5; however, it is not clear that these elements are used to generate an electric field circumferentially around the substrate and coating material. Furthermore, the nozzle 15 in Figure 5 is not shown connected to ground or a power source so as to polarize the liquid dispensed from the nozzle. Without such polarization of the dispensed liquid, it must be questioned as to whether the elements 24 as shown are in place to generate an the electric field around the substrate so as to uniformly distribute the coating on the substrate. Accordingly, Applicant respectfully requests that this rejection be reconsidered and withdrawn.

Based on the above, Applicant respectfully requests that the Examiner reconsider and withdraw all outstanding rejections and objections. Favorable consideration and allowance are earnestly solicited. Should there be any questions after reviewing this paper, the Examiner is invited to contact the undersigned at 617-248-4038.

Respectfully submitted,
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